

**Robotics Assignment**

Assignment 1A

Aim: Write a program to create a robot to perform rectangular motion using gears

Description:

1) NxtRobot() :

Class that represents a simulated NXT robot brick. Parts (e.g. motors, sensors) may be assembled into the robot to make it doing the desired job.

2) Gear() :

Creates a gear instance with right motor plugged into port A, left motor plugged into port B.

3) addPart() :

Assembles the given part into the robot.

4) setSpeed() :

Sets the speed to the given value (arbitrary units).

5) forward() :

Starts the forward movement for the given duration (in ms) and stops. Method returns at the end of the given duration.

6) left() :

Starts to rotate left (center of rotation at middle of the wheel axes). Method returns immediately, while the movement continues

Code:

import ch.aplu.robotsim.NxtRobot;

import ch.aplu.robotsim.Gear;

public class assignment1A {

public assignment1A() {

NxtRobot r = new NxtRobot ();

Gear g = new Gear();

r.addPart (g);

g.setSpeed (100);

while (true){

g.forward (800);

g.left (280);

}

}

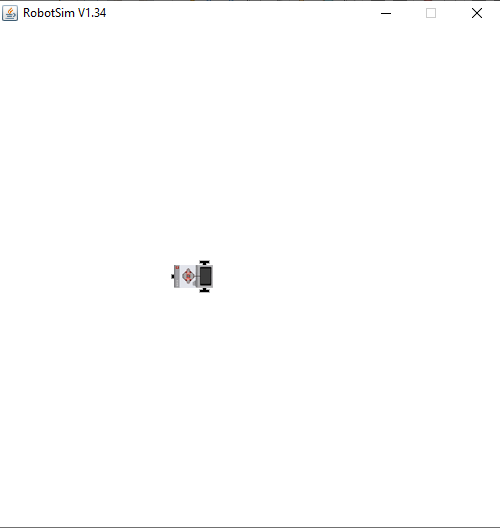
public static void main (String [] args){

new assignment1A ();

}

}

Output:



Assignment 1B

Aim: Write a program to create a robot to perform circular motion using gears

Description:

1) rightArc() :

Starts to move to the right on arc with given radius. Method returns immediately, while the movement continues.

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Code:

import ch.aplu.robotsim.NxtRobot;

import ch.aplu.robotsim.Gear;

public class assignment1B {

public assignment1B () {

NxtRobot r = new NxtRobot ();

Gear g = new Gear ();

r.addPart (g);

g.setSpeed (100);

while (true) {

g.rightArc (0.5);

}

}

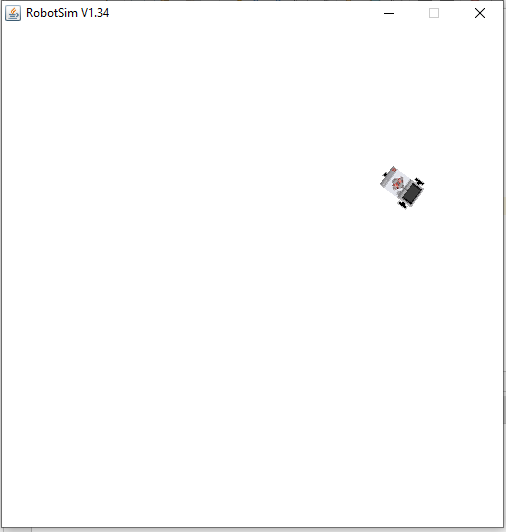
public static void main (String [] args){

new assignment1B ();

}

}

Output:



Assignment 2A

Aim: Write a program to create robot to perform a square motion without using gear.

Code:

import ch.aplu.robotsim.\*;

public class Assignment\_2a {

Assignment\_2a () {

TurtleRobot t = new TurtleRobot ();

t.setTurtleSpeed (100);

while (true){

t.forward(200);

t.left (90);

}

}

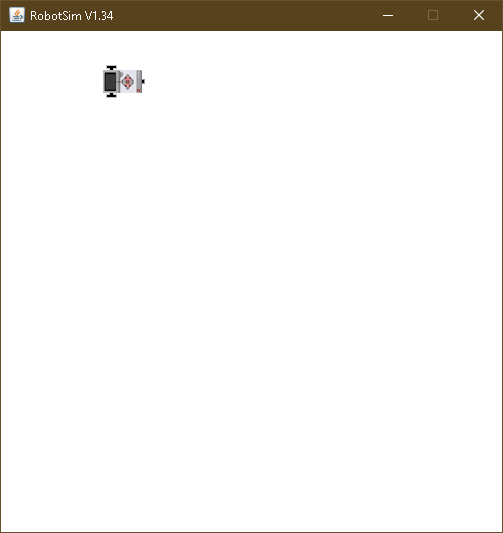
public static void main (String [] args) {

new Assignment\_1a ();

}

}

Output:



Assignment 2B

Aim: Write a program to create robot to perform a circular motion without using gear.

Code:

import ch.aplu.robotsim.\*;

public class Assignment\_2b {

Assignment\_2b () {

TurtleRobot t = new TurtleRobot ();

t.setTurtleSpeed (100);

while (true) {

t.forward (2);

t.left (2);

}

}

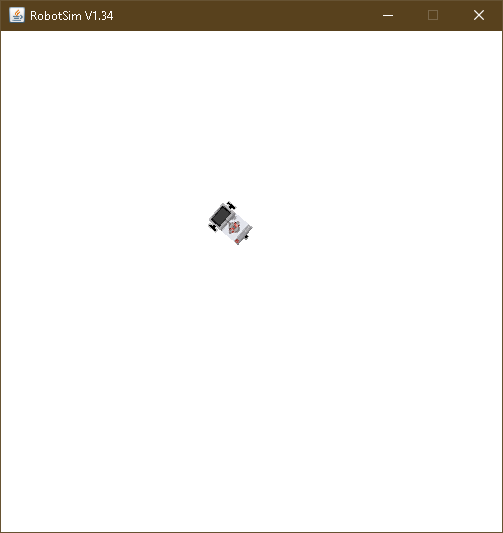
public static void main (String [] args) {

new Assignment\_1b ();

}

}

Output:



Assignment 3

Aim: Write a program to do a square using while or for loop, change direction based on condition and control motor movement

Description:

1) Motor() :

Creates a motor instance that is plugged into given port.

2) Tools.delay() :

Suspends execution of the current thread for the given amount of time.

Code:

import ch.aplu.robotsim.\*;

import java.util.\*;

public class assignment2 {

assignment2 () {

Scanner sc = new Scanner (System.in);

NxtRobot r = new NxtRobot ();

Motor m1 = new Motor (MotorPort.A);

Motor m2 = new Motor (MotorPort.B);

r.addPart (m1);

r.addPart (m2);

System.out.println ("Enter 1 for left and 2 for right :");

int direction = sc.nextInt ();

switch (direction) {

case 1:

for (int i=0; i<4; i++){

m1.forward ();

Tools.delay (1090);

m2.forward ();

Tools.delay (1090);

m1.stop ();

m2.stop ();

}

break;

case 2:

for (int i=0; i<4; i++){

m2.forward ();

Tools.delay (1090);

m1.forward ();

Tools.delay (1090);

m1.stop ();

m2.stop ();

}

break;

}

}

public static void main (String args[]){

new assignment2 ();

}

}

Output:

